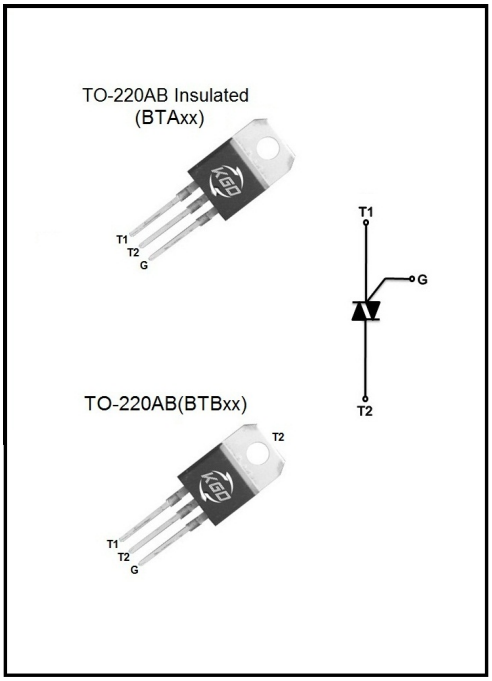
# BTA16/BTB16 Series

- **Description:**
  High current density due to double mesa trchnology;
  SIPOS and Glass Passivation.

- **Applications:**
  BTA16/BTB16 series triacs is suiable for general purpose AC switching.
  They can be used as an ON/OFF function in applications such
  as static relays,heating regulation,induction motor stating circuits...
  or for phase contol operation light dimmers,motorspeed controllers.

- **Features:**
  BTA16/BTB16-XXXSW/CW/BW are 3 Quandrants TRIACS,
  They are specially recommended for use on inductive loads.
  BTA16 are isolated internally,they providesa 2500V RMS isolation
  voltage from all three terminals to extemal heetsink.
  Blocking voltage to 600/800V
  On-state RMS current to 16A
  Non-repetitive peak on-state current to 160A




- **Absolute Maximum Ratings**

| Symbol | Parameter | | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{DRM}$ | Repetitive peak off-state voltage | | $T_J$=25℃ | 600 | 800 | V |
| $V_{RRM}$ | Repetitive peak Reverse voltage | | $T_J$=25℃ | 600 | 800 | V |
| $I_{T(RMS)}$ | RMSon-statecurrent (full sine wave) | TO-220AB | Tc=100℃ | - | 16 | A |
| | | TO-220AB Ins | Tc=86℃ | - | | |
| $I_{TSM}$ | Non-repetitive peak On-state current (full cycle, $T_J$=25℃) | | F=50Hz, t=20ms | - | 160 | A |
| | | | F=60Hz, t=16.7ms | - | 168 | A |
| $I^2t$ | $I^2t$ Value for fusing | | Tp=10ms | - | 144 | $A^2S$ |
| di/dt | Rate of rise of on-state current | | $I_G$=2×$I_{GT}$,$t_r$≤100ns, $T_j$=125℃ | - | 50 | A/μs |
| $I_{GM}$ | Peak gate current | | $t_p$=20μs, $T_j$=125℃ | - | 4 | A |
| $P_{G(AV)}$ | Average gate power | | | - | 1 | W |
| $T_{STG}$ | Storage temperature | | | -40 | 150 | ℃ |
| $T_J$ | Junction temperature | | | -40 | 150 | ℃ |

## ● Electrical Characteristics

■ 3 Quadrants

| Symbol | Conditions | Quadrant | | BTA16/BTB16 | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | SW | CW | BW | |
| $I_{GT}$ | $V_D$=12V,$R_L$=33Ω | I-II-III | MAX | 10 | 35 | 50 | mA |
| $V_{GT}$ | | I-II-III | MAX | | 1.3 | | V |
| $V_{GD}$ | $V_D$=$V_{DRM}$,$R_L$=3.3KΩ, $T_j$=125℃ | I-II-III | MIN | | 0.2 | | V |
| $I_L$ | $I_T$=1.2$I_{GT}$ | I-III | MAX | 20 | 50 | 70 | mA |
| | | II | MAX | 35 | 60 | 80 | |
| $I_H$ | $I_T$=100mA | | MAX | 15 | 40 | 60 | mA |
| dv/dt | $V_{DM}$=67%$V_{DRM}$,gate open,$T_j$=125℃ | | MIN | 40 | 400 | 1000 | V/μs |
| (di/dt)c | (dv/dt)c=0.1 V/μs ,$T_j$=125℃ | | MIN | 8.5 | / | / | A/ms |
| | (dv/dt)c=10 V/μs ,$T_j$=125℃ | | | 3.0 | / | / | |
| | Without snubber , $T_j$=125℃ | | | / | 8.5 | 14 | |

■ 4 Quadrants

| Symbol | Conditions | Quadrant | | BTA16/BTB16 | | Unit |
|---|---|---|---|---|---|---|
| | | | | C | B | |
| $I_{GT}$ | $V_D$=12V,$R_L$=33Ω | I-II-III | MAX | 25 | 50 | mA |
| | | IV | | 50 | 100 | |
| $V_{GT}$ | | ALL | MAX | | 1.3 | V |
| $V_{GD}$ | $V_D$=$V_{DRM}$,$R_L$=3.3KΩ, $T_j$=125℃ | ALL | MIN | | 0.2 | V |
| $I_L$ | $I_T$=1.2$I_{GT}$ | I-III-IV | MAX | 40 | 50 | mA |
| | | II | MAX | 80 | 100 | mA |
| $I_H$ | $I_T$=100mA | | MAX | 25 | 50 | mA |
| dv/dt | $V_{DM}$=67%$V_{DRM}$,gate open,$T_j$=125℃ | | MIN | 200 | 400 | V/μs |
| (dv/dt)c | (di/dt)c=7A /ms ,$T_j$=125℃ | | MIN | 5 | 10 | V/μs |

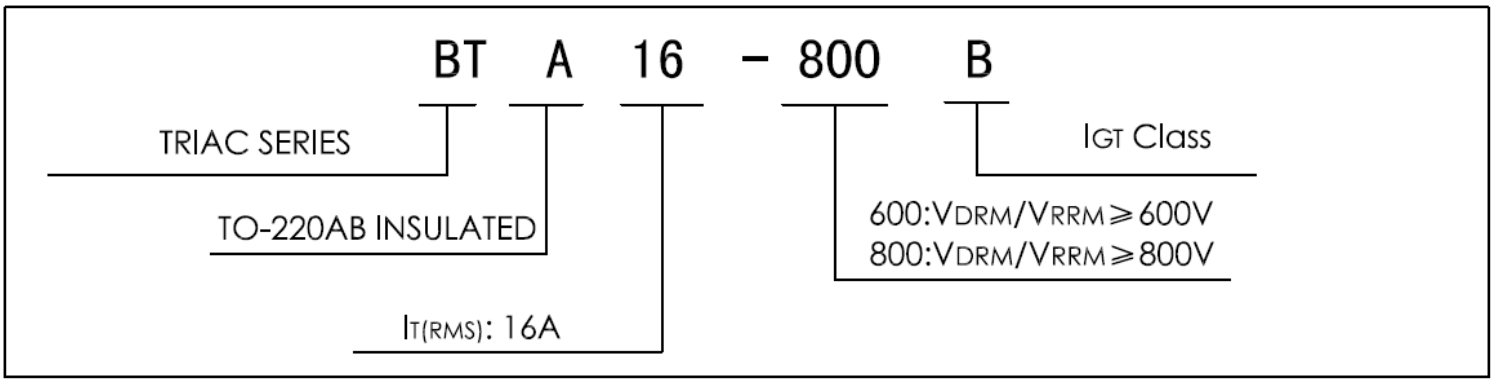
- **Static Characteristics**

| Symbol | Conditions | Quadrant | | Value | Unit |
|---|---|---|---|---|---|
| $V_{TM}$ | $I_T$=22.5A,tp=380μs | $T_J$=25℃ | MAX | 1.55 | V |
| $I_{DRM}$ $I_{RRM}$ | $V_D=V_{DRM}$,$V_R=V_{RRM}$ | $T_J$=25℃ | MAX | 5 | μA |
| | | $T_J$=125℃ | MAX | 2 | mA |

- **Thermal Characteristics**

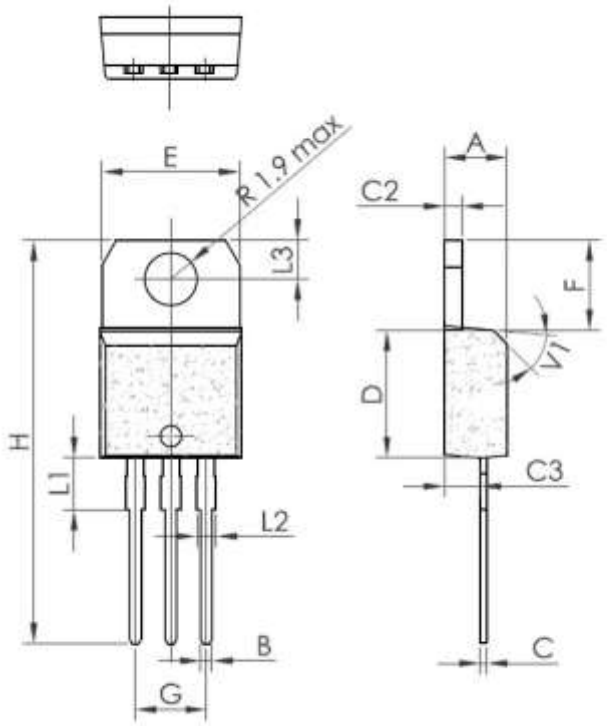
| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $R_{th(j-mb)}$ | Junction to Case(AC) | TO-220AB | 1.2 | ℃/W |
| | | TO-220AB Insulated | 2.1 | |
| $R_{th(j-a)}$ | Junction to am bient | TO-220AB | 60 | ℃/W |
| | | TO-220AB Insulated | | |

- **Ordering Information**



- **Package Outline Dimensions**

TO-220AB




| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.4 | | 4.6 | 0.173 | | 1.181 |
| B | 0.61 | | 0.88 | 0.024 | | 0.034 |
| C | 0.49 | | 0.70 | 0.019 | | 0.027 |
| C2 | 1.23 | | 1.32 | 0.048 | | 0.051 |
| C3 | 2.4 | | 2.72 | 0.094 | | 0.107 |
| D | 8.6 | | 9.7 | 0.338 | | 0.382 |
| E | 10 | | 10.4 | 0.393 | | 0.409 |
| F | 6.2 | | 6.6 | 0.244 | | 0.259 |
| G | 4.8 | | 5.4 | 0.189 | | 0.213 |
| H | 28.0 | | 29.8 | 11.0 | | 11.7 |
| L1 | | 3.75 | | | 0.147 | |
| L2 | 1.14 | | 1.7 | 0.044 | | 0.066 |
| L3 | 2.65 | | 2.95 | 0.104 | | 0.116 |
| V1 | | 40° | | | 40° | |

- **Marking**

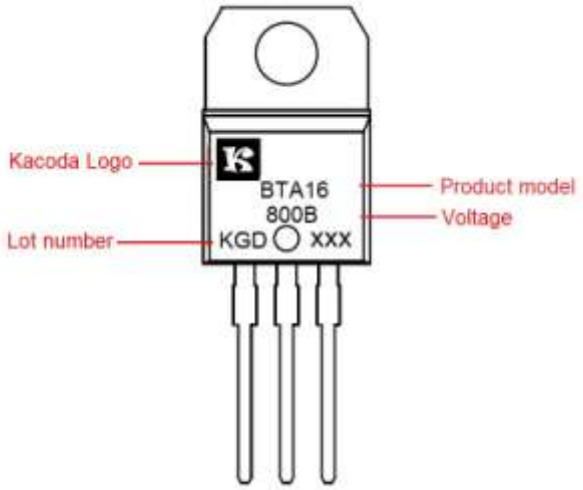


FIG.1:Maximum power dissipation versus RMS on-state current(full cycle)

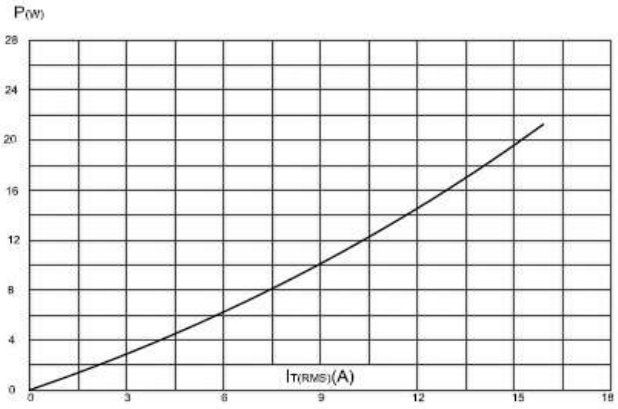



FIG.2:RMS on-state current versus case temperature(full cycle)

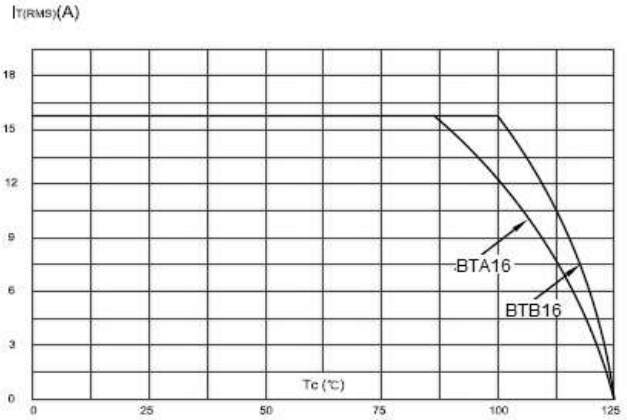



FIG.3:On-state characteristics (maximum values).

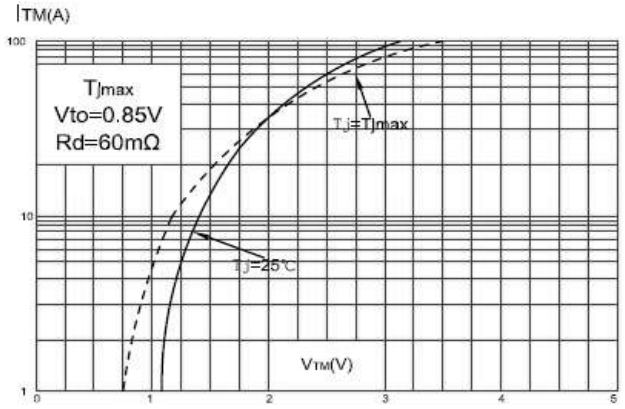



FIG.4:Surge peak on-state current versus number of cycles.

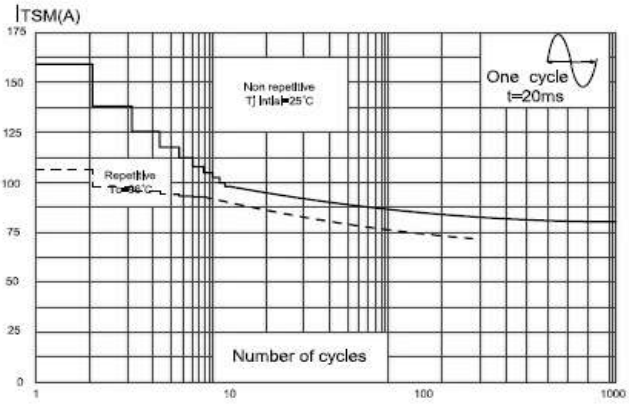



FIG.5:Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms,and corresponding value of I²t.

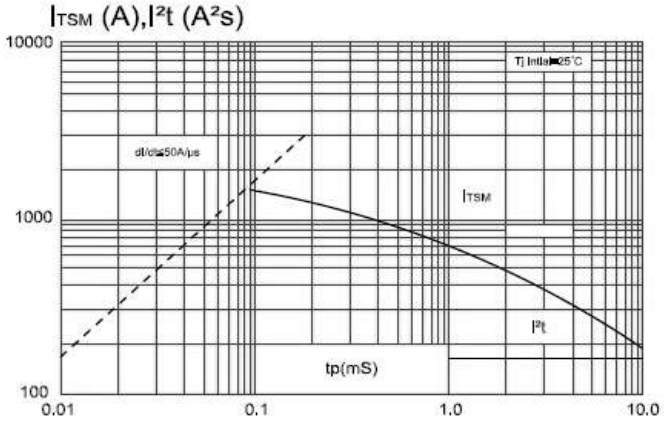



FIG.6:Relative variations of gate trigger current,holding current and latching current versus junctlon temperature(typlcal values)